WOMEN'S INSTITUTE BRANCH
DEPARTMENT OF AGRICULTURE
PROVINCE OF ALBERTA

Home Canning

OF

FRUITS
VEGETABLES
MEATS

BY

BESSIE CAMERON McDERMAND
ASSISTANT SUPERINTENDENT AND DIRECTOR
OF HOUSEHOLD ECONOMICS

PUBLISHED BY THE DIRECTION OF
HON. DUNCAN MARSHALL, MINISTER OF AGRICULTURE

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Home Canning Instructions

Science teaches that there are many living organisms so minute that the aid of the microscope is necessary in order to see them. The general term "micro-organisms" is used to designate these living bodies, which include bacteria, yeast, and moulds. Familiar examples of each group are the blue-green mould of spoiled fruits, the yeast used in bread-making and the bacteria of the scum and "mother" of vinegar. These micro-organisms are found everywhere; in the soil, in the air, in water, and on all surfaces exposed to air. They multiply with great rapidity.

The spoilage of food is due to the activity of these living organisms which live on food-substances. When the micro-organisms use the food they break it down, and bring about the changes called putrefaction, decay, and fermentation. Because of these changes, food is rendered unfit for use, i.e., moulding of jellies, the swelling and souring of canned fruits and vegetables, and the ptomaines of canned meat. The character of the material largely determines which type of spoiling will occur. Acidity is favourable to yeasts and moulds. Fruits may therefore spoil by yeast fermentation, or become mouldy. Bacteria prefer a medium of little or no acid; when vegetables decay, it is, therefore, usually due to the action of bacteria. Neither fruits nor acid vegetables are favourable to the growth of the bacteria which produce the poisonous ptomaines sometimes found in spoiled meats.

The preservation of food depends upon the success of the effort to protect food-materials from attacks of bacteria, yeasts, and moulds. **Canning is a method of preserving food by sterilizing, and packing it in sterile air-tight jars.** The aim in canning is to preserve the natural color, texture and flavor of food, as well as to sterilize.

FIG. I.—HOT WATER BATH OUTFIT. (NOTE RIM ON COVER)

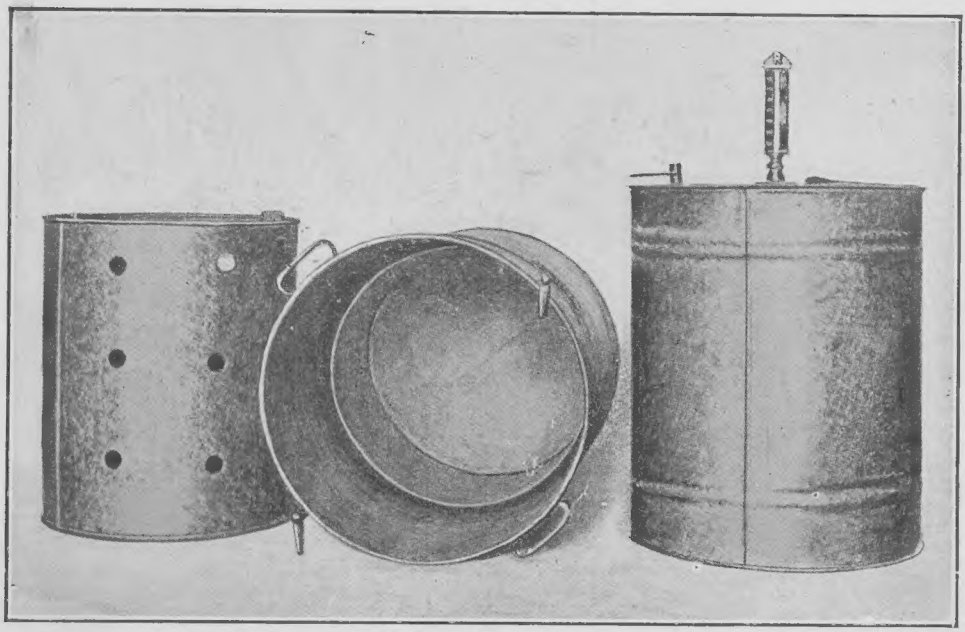

FIG. II.—WATER SEAL OUTFIT.

CANNING OUTFITS

Hot-Water Bath.—A wash-boiler, new garbage-pail, or galvanized tub may be used. The cover should be tight-fitting. To insure a tight-fitting cover, an inch rim could be soldered on the cover, so that it would fit tightly in the mouth of the receptacle. A false bottom should be used, which would allow a ¾-inch space at the bottom for the circulation of water. The rack prevents the jars from coming in contact with the hot metal of the bottom of the boiler, therefore preventing the breakage of the glass jar. The false bottom could be of wire netting of size suitable for the boiler used; similar in design to a cake rest. A rack made of strips of wood might be used, or a board which has been bored full of holes at regular intervals.

Water Seal Outfit.—This outfit consists of three parts; the steam-chest, the perforated basket, and the cover. The steam-chest is usually made of galvanized iron. The jars are placed in the perforated basket, which is lowered into the steam-chest. The rim of the cover is extended, so that when it is lowered into the steam-chest it touches the bottom of the chest. The steam formed from the boiling water cannot escape, but is sealed in. This steam is under slight pressure, the temperature ranging from 212 degrees to 218 degrees Fahrenheit.

Water Seal Outfits can be purchased at prices ranging from $8.00 to $15.00, depending upon the size.

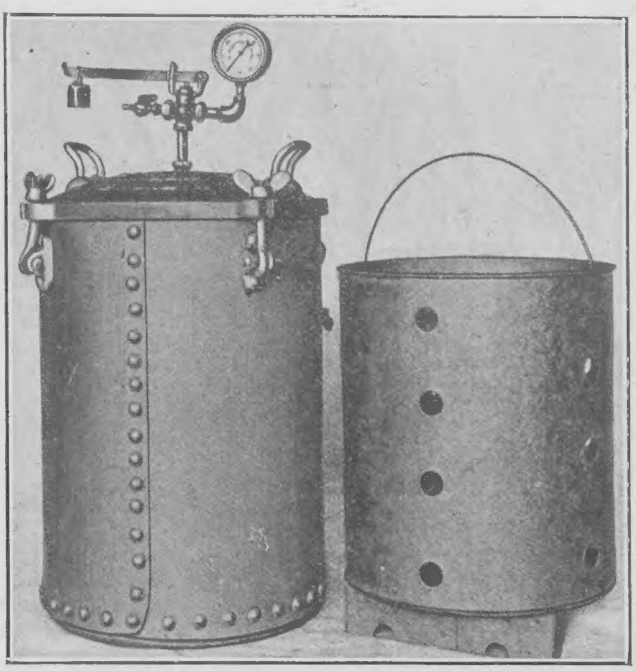

FIG. III.—STEAM PRESSURE OUTFIT

Steam-Pressure Outfit.—This type of canner is made of heavy metal, and the cover is held in place by means of clamps, so that

it is capable of a steam-pressure of from 5 to 20 pounds. The canner is supplied with a steam gauge, a thermometer and pet-cock to regulate the pressure. With the steam-pressure equipment, the time for complete sterilization is greatly reduced; the greater the pressure, the less the time required for sterilization. The water is generally heated by a gasoline burner. They heat very quickly, as they require only about 1½ inches of water and save fuel. They cost from $15.00 up.

GENERAL RULES

1. Can fruit in season when it is cheapest.
2. Use firm fresh fruit.
3. If fruit discolors, place it in cold water, or pack into jars and cover to exclude the air.
4. Use tested jars. Fit the rubber on the jar, fill partly full with boiling water and adjust the top. Invert the jar; if there is no leak, the jar is air-tight. If there is a leak, this may be remedied by using two rubbers or a new top.
5. Use **new** rubbers each year. Choose good elastic rubbers. Rubbers woven with fabric are most desirable.
6. Count the time of sterilization after the water starts to boil, but have a hot fire, so that boiling will not be delayed. In the steam-pressure outfit count the time for fruits after the pressure gauge passes zero and temperature registers 212 degrees F.; and for vegetables and meats after pressure gauge has reached 5 lbs.
7. Keep the canned goods in a dark place to prevent fading.
8. Remember that cleanliness and perfect sterilization are essential.

METHODS

1. **Open Kettle**—For fruits only.
2. **Cold Water**—For Rhubarb and Gooseberries.
3. **Intermittent Cold Pack**—For non-acid vegetables.
4. **Cold Pack One Period**—For fruits, vegetables, soups and meats.

OPEN KETTLE METHOD

The Open Kettle method of canning fruit is rapidly being replaced by other methods, as it is wasteful of both time and energy, and is of no value in the canning of foods other than fruits. However, some people prefer it for plums and peaches.

1. Wash and rinse the jars and tops, and set them in a pan of cold water having paper in the bottom of pan. Boil for ten minutes after boiling begins.

2. Prepare the fruit, and cook a small quantity of it at a time in the syrup until tender; just enough fruit to cover surface of syrup. If there is too much syrup for first lot of fruit, a second quantity may be cooked in it.

3. Set the jars in a pan of water having paper in the bottom of the pan. Boil 10 minutes after water starts to boil.

4. Fill to overflowing with fruit and syrup.

5. Dip new rubbers in boiling water and adjust. Screw on the top, and invert the jars overnight to ensure a perfect seal.

6. In the morning re-screw the top, label, and put away in a dark cupboard.

7. The density of syrup depends upon the fruit. See Syrup Recipes, pages 11 and 12, and time-table.

COLD WATER METHOD

This method is only practicable with rhubarb, cranberries, gooseberries and a few other sour berry-fruits.

1. Wash fruit thoroughly and blanch according to time indicated on time-chart.

2. Pack at once into sterilized jars and fill the jars to the top with cold sterilized water. To do this the jar may be lowered into a pail of water, and held there until the air-bubbles cease coming to the surface of the water in the pail; then seal under water. Another method of doing this is by placing the jar under the water faucet and allowing the water to run into the jar until the jar overflows for some time.

3. Screw on the tops, and set the fruit in a cool dark place.

INTERMITTENT COLD PACK METHOD

Vegetables are more difficult to can than fruits, because of the presence of spore-bearing bacteria which are more resistant to heat than yeast or moulds. These bacteria will live and decompose vegetables even with the exclusion of air. They reproduce by spores, which may be compared to the seeds of the ordinary plant. These spores retain vitality for a long time even at boiling temperature, and on cooling will germinate. Therefore, in order to completely sterilize a vegetable, it is necessary to boil for one hour on three successive days. The boiling on the first day kills all the living bacteria, but does not kill the spores. As the jar cools, the spores germinate and the boiling on the second day kills the fresh crop of bacteria. The third boiling is to ensure perfect sterilization. This method is known as the Intermittent Method, and may be used with vegetables.

1. Use a wash-boiler with a tight-fitting cover. Have it fitted with a false bottom of wood strips, or wire netting, that will allow at least ¾ inch for circulation of water underneath the jars.

2. Fill the boiler with enough water to cover the jars at least 1 inch.

3. Prepare the food.

4. Pack firmly into jars, allowing a little room for swelling. Add one teaspoonful of salt to each quart jar and fill with warm water.

5. Adjust the rubber and top, and screw the bail loosely to allow for the escape of steam. If using a clamp-top jar, do not put the clamps down.

6. Place the jars in the boiler, but do not have them touch. Cover the boiler tightly, and boil one hour after boiling begins.

7. Screw the top lightly, and let stand till the next day.

8. Unscrew the tops, but do not remove the glass cover. Boil one hour after boiling begins. Re-screw the tops and let stand till the next day.

9. Repeat this on the third day, and put the jars in a cool dark place.

N.B.—For half-gallon jars, allow 1½ hours each day.

COLD PACK METHOD—ONE PERIOD

The One Period Cold Pack Method is to be preferred to all other methods, as it decreases the work of canning and is just as effective as the Intermittent Method. It is the method used in canning-factories where the food is canned under pressure, but it may be used in the home, where a wash-boiler is used, with all fruits and vegetables.

1. Use a boiler with a false bottom as in the Intermittent Method, and fill with enough water to cover the jars at least one inch.

2. Prepare the fruit or vegetables to be canned.

3. Scald or blanch the foods the required length of time, according to the table. In blanching be sure to keep the water boiling.

4. Plunge the food into cold water, and leave it in cold water until cool.

5. For vegetables, remove the skins and cut in convenient size. Pack tightly in the jar. Add 1 teaspoonful of salt to each jar, and fill full with boiling water.

6. For fruits, remove the skin if desired, and pack into the jars. Add boiling syrups, the density of the syrup depending upon the kind and variety of fruit (see time-table).

7. Place jars in boiling water. Cover the boiler tightly, and boil the required length of time (see time-table).

8. Remove jars. Screw tightly and invert overnight.

Terms Explained.

1. Scalding—is pouring water over the food in order—

(a) To loosen the skin;
(b) To eliminate objectionable acids and acrid flavour;
(c) To start the flow of colouring material.

2. Blanching—is boiling the food in water, or steaming. Use a cheese-cloth bag, or a wire frying-basket, or strainer, to lower the food into the water.

The blanching process is used—

(a) To loosen the skin;
(b) To eliminate acids and acrid flavours;

(c) To reduce bulk;
(d) To make the Intermittent or fractional method unnecessary.

3. Cold Dip—is to chill quickly by dipping in cold water the fruits or vegetables.

Purposes of cold dip are—
(a) To harden the pulp under the skin and thus permit the removal of the skin;
(b) To coagulate the colouring matter and to make it harder to dissolve during the sterilization period;
(c) To make it easier to handle the products in packing.

Special Directions for Canning Vegetables

Allow one level teaspoonful of salt to each can of vegetable.

Use absolutely fresh vegetables. This is especially true of corn and peas. All vegetables and fruits should be graded according to size, so that the various sizes will cook through at the same time. This adds greatly to the appearance of the finished jar.

FIG. IV.—CANNING UTENSILS.

Note on Jar No. 1 the clamp is up in the position necessary when putting the Jar in a hot Water Bath. No. 2—On this Jar the Clamp is down as it should be placed as removing from Hot Water Bath.

Asparagus.—Grade into large, medium, and small sizes. Break stalks the correct length to pack well in jars. Pack with tips up.

String-beans.—Select young, tender beans. Wash, string from both ends and pack.

Beets.—Beets should be small and turnip-shaped. Extra fancy grade may be 1 to 1½ inches in diameter and the fancy over 1½ inches. Blanch, skin, and pack in jars.

Cauliflower.—Soak the cauliflower 3 to 6 hours head down in salted cold water, to remove insects. Wash, break into flowerets, blanch, cold dip, and pack.

Carrots.—Wash thoroughly, blanch, and cold dip. Remove skins. Pack in cans whole or in slices. (Carrots are delicious pickled—prepare the same as for canning, adding to each pint a half cup of vinegar, 1 tablespoonful sugar, 1 teaspoonful whole spice. This may be used for beets also.)

Corn.—Use the corn when it is freshly picked. Remove husks and silk. Trim and cut out blemished spots. Blanch and cold dip. When canning on the cob, pack jars alternating butts and tips. Sterilize corn on the cob 4 hours in the hot water bath. When canning the corn cut from the cob, blanch, then cut from cob and pack in jars. If not enough milk in corn to form liquid, fill jar full of water.

Peas.—Select as tender peas as possible, wash the pods and shell. Use absolutely fresh peas; do not allow them to stand overnight before canning.

FIG. V.—FRUIT AND VEGETABLES CANNED BY COLD PACK METHOD.
Top Row from left: Apricots, Pineapple. Middle row from left: Gooseberries, Rhubarb, Peaches, Cherries, Plums. Bottom row from left: Cauliflower, Tomatoes, Asparagus, Beans, Peas.

Parsnips.—Gather early in the summer before they become woody. Wash, scrape, blanch, and cold dip. Pack in jars.

Pumpkin and Squash.—Steam until tender before packing in jars. In canning pumpkin for pie fillings, steam, then mash, add a cup of sugar and a teaspoon of salt to each quart of pulp, then sterilize as directed by time-table.

Tomatoes.—After the scalding and cold dip, core and skin. Pack whole. Cover with hot tomato-juice pressed from mashed fresh tomatoes. Sterilize according to time-table.

Greens, Spinach, Chard, Beet-tops.—Prepare and can the same day they are picked. Sort and clean. Steam 15 to 20 minutes. Then cold dip, and pack in jars. Add boiling water to fill up spaces if necessary.

Tomato Soup.—½ bushel ripe tomatoes, 1 dozen onions, 8 bunches of celery, 1 bunch of parsley, 1 dozen cloves, 8 bay leaves. Boil all together and put through colander, then sieve, then add one cup granulated sugar, half cup of salt, half a teaspoonful of cayenne. Boil up and seal.

VEGETABLE TIME-TABLE

Vegetables	Blanching (Minutes)	Home Water-bath Outfit (Minutes)	Water Seal Outfit (Minutes)	Pressure cooker 5 lbs. Steam (Minutes)
Asparagus	5	90	70	50
Peas	6	120	90	60
String-beans	6	120	90	60
Young Lima Beans	6	120	90	60
Corn	15	180	120	75
Spinach, Chard, etc	15-20	90	70	50
Green Peppers	5	120	90	60
Squash and Pumpkin	15-30	105	60	40
Beets	7	105	75	60
Carrots	5	105	75	60
Tomatoes	1	22	20	10
Sweet Potatoes, Parsnips and Turnips	5	90	70	60
Cauliflower and Brussels Sprouts	5	90	70	60
Mushrooms	5	90	70	60
English Marrow	5	90	70	50
Rhubarb	2	20	20	15

It is advisable for housekeepers who are obliged to buy their vegetables from the market for canning purposes to use the Intermittent Cold Pack Method. Blanch according to the above time-table and then plunge into cold water before packing into jars. Pack according to rules given and place in hot water bath and boil for one hour each day for three successive days.

Special Directions for Canning Fruits

Fruits may be canned with or without sugar, but it is a saving of both time and fuel if a syrup composed of the proper proportion of sugar is used to fill up the can rather than plain water.

Syrups of different densities or degrees of sweetness are used in the canning of fruits. The choice depends upon the tartness of the fruit, and the richness of the result desired.

The ripeness of the fruit, and the fullness of the pack will influence the amount of syrup used. The following syrups are made according to the California Syrup Formula:

CALIFORNIA SYRUP FORMULA

'0. **Very Thin Syrup.** One cup, or less, of sugar to one cup of water, and heated to the boiling point.

1. **Thin Syrup.** One and one-half cups of sugar to one cup of water. Heat to the boiling point.

2. **Medium Thin Syrup.** Mix in the proportion of one and one-half cups of sugar and one cup of water. Boil two to three minutes, or until the solution begins to be syrupy.

3. **Medium Thick Syrup.** Mix in proportion of one and one-half cups of sugar and one cup of water. Boil six to eight minutes, or until it piles up on the edge of a spoon when poured from it.

4. **Thick Syrup.** One and one-half cups sugar and one cup of water. Boil eight to twelve minutes, or until it forms a soft ball in water.

Note. These syrups are designated by their numbers on the time-table.

FRUITS

The fruits should be fresh, firm, but ripe; for instance, a green peach will not do up with as good a flavour as the ripe peach. The fruit should be entirely free from rot, blemish, or mould; if gritty, as with strawberries, they should be thoroughly cleaned.

The fruit should be packed in clean jars. The fruit should be packed uniformly and the cans filled full. Then add the syrup until overflowing, and fit the top, but not perfectly tight, so as to allow for a certain amount of expansion when the after-sterilization process takes place.

Apples. Peel, core, and then blanch and cold dip. Pack in jars and add syrup. Boiled cider may be used instead of syrup, if desired.

Pineapple, Citron and Cantaloupe. Should be pared and cut in convenient size for canning before blanching.

Pears, Quinces, etc. The Bartlett Pear is the best variety for canning. Remove skins, cut in halves or other desired shape. They may be canned whole with stems on. Pears brown rapidly as soon as peeled and should be allowed to stand in water.

Plums. - Wash the fruit, and grade according to appearance, size and degree of ripeness. Blanch, cold dip, and pack in jars; fill the jars full with syrup and cook according to time-table. The greengage and egg-plums are the varieties most used. Some people prefer the plums unblanched.

Apricots. -Many canners make the mistake of canning apricots too green. The fruit should be ripe and well coloured, but not too soft. They may be canned whole, or pitted and halved, leaving the skin on in both cases. A heavy syrup develops the flavour of an apricot.

Currants, Cranberries, Gooseberries. -These fruits are used for pies, jellies and jams, and are not commonly canned. Can according to time-table.

Rhubarb. -May be canned as a sauce. If tender, leave the skin on.

Peaches.—Blanch, cold dip, then peel.

Cherries.—Cherries canned without pitting develop a bitter almond or pit flavour, pleasing to some and disagreeable to others. Cherries tend to shrivel in heavy syrup. Blanch, cold dip, and sterilize as directed by time-table.

Berries. -Can fresh sound berries the same day they are picked if possible. Remove hulls and stems, if any. Place in strainer or colander and pour cold water over them to cleanse. Pack closely in jars without crushing. Pour hot syrup over it, fill up cans. Sterilize according to time-table.

Strawberries.— Hull (twist berries from hull) and place in colander or strainer, pouring water over berries. Pack in jar, adding sufficient syrup, then sterilize as directed. Strawberries, however, shrink badly in volume when canned in the can as above directed. Strawberries can well by adding to each pound of berries three-quarters of a pound of sugar and allowing them to stand from two to four hours. Then bring slowly to the boiling point, and can in sterilized jars.

Strawberries (Sun Preserves). -Choose firm, ripe berries, hull and cleanse as directed. Place on a shallow platter in a single layer and sprinkle thickly with sugar in proportion of 1 lb. of berries to 1 lb. of sugar. Cover with a glass. Allow to cook in hot sun for five to ten hours. Place in sterilized glasses or jars. Cover with paraffin or sealing-wax.

Strawberries fade badly. The jars should be wrapped in paper, then keep in a cool, dry place.

FRUIT TIME-TABLE

Fruits	Blanching (Minutes)	No. of Syrup to use indicated	Home Hot Water Bath outfit (Minutes)	5 lbs. Steam (Minutes)	Water Seal Outfit (Minutes)
Strawberries	No blanching	No. 3	16	8	10
Raspberries	"	No. 2	16	8	10
Blackberries	"	No. 3	16	8	10
Loganberries	"	No. 3	16	8	10
Sweet Cherries	"	No. 0 or 1	16	8	10
Grapes	"	No. 2	20	12	15
Wild Grapes	1	No. 3	20	12	15
Blueberries and Huckleberries	1	No. 2	20	10	15
Saskatoons	1	No. 2	20	10	15
Plums	1	No. 3	20	12	15
Currants	1	No. 3	16	10	12
Gooseberries	1	No. 3	16	10	12
Sour Cherries	1	No. 3	20	12	15
Cranberries	1	No. 2	16	12	10
Peaches	2	No. 0 or 1	20	15	12
Apricots	2	No. 3	20	15	12
Pineapple	5	No. 2	35	25	22
Figs	6	No. 2	40	30	25
Pears	1½	No. 2	25	18	15
Apples	1½	No. 0 or 1	20	15	12
Quinces	1½	No. 2	25	18	15
Citron	10	No. 3	35	25	20
Cantaloupe	6	No. 2	25	18	15
Rhubarb	2	No. 3	20	15	12

CANNING OF MEATS

Method No. 1

The meat should be freed from the bone, as spoilage first starts near the bone. This is especially true if canning meat in the summer. Pack raw meat in tested clean jars adding a teaspoon of salt to each jar of meat. Add no water. There is sufficient water in the meat to form the gelatinous substance about the canned meat. Additional seasoning may be added if desired. Adjust a new rubber on the jar, place the cover on the top of the jar, but do not fasten the clamps; or if a Mason jar is used, partly screw on the cover. Sterilize the meat in a home-made hot water bath from four to five hours. If a steam-pressure canner is used, cook for three hours at five pounds pressure. Complete the sealing of each jar by adjusting the clamp, or in the case of the Mason jar, by screwing the top on tightly. Do not invert the jar while it is cooling. If the jar were inverted, the fat, which is lighter, would rise to the bottom of the jar and cool and harden there. When the jar is left upright, the fat comes to the top of the jar and hardens there, forming an extra seal.

*Method No. 2

Sear the meat in a hot oven, in a hot frying-pan, or in boiling water, and steam it or simmer it until it can be torn apart. Pack the meat in jars, fill the space with stock, and add one teaspoon of salt to each jar of meat. Sterilize the meat in home-made hot water bath for three hours as in Method No. 1. Unless the meat is first browned, it has not as good a flavour as that of raw meat steamed in a can.

Practically any meat may be canned by these methods.

***Canned Chicken.**—Chicken may be sucessfully canned by either method suggested. Canning surplus cockerels, that have reached the proper size, does away with the necessity of feeding and caring for them during the winter months. A fowl weighing two pounds when dressed should make a pint can of solid meat and a pint of stock thick enough to jelly.

***Chicken-stock.**—All bones and trimmings of the chicken should be covered with cold water, salted and slowly simmered until the flesh drops in shreds from the bones and the liquid or stock is concentrated. Seasoning, such as onion and a bit of celery leaf, may be added. Strain the stock if desired, re-heat it and boil it for ten minutes. Pour into sterilized jars, and sterilize it as described for two hours, or for one hour on each of two successive days.

Stock.—Make soup, using 1 quart of water, 1 pound of meat; or, if a heavy stock is required, 1 pint of water to 1 pound of meat. (In choosing meat for soup, secure two-thirds muscle and one-third fat and bone.)

Do not add vegetables to stock which is to be canned, as they are apt to cause the stock to sour. Do not remove fat, and while hot pour into cans. Sterilize one and one-half hours. Allow the cans to stand upright when cooling, so that the fat will harden at the top and form the extra seal. When opening the jar, remove the fat and re-heat; vegetables cut in uniform or fancy shapes may be added, or vegetable water may be added.

DIFFICULTIES

BREAKAGE OF JARS—CAUSES

1. Over-packing jars. Corn, pumpkins and sweet potatoes swell in processing.
2. Placing cold jars in hot water and *vice versa*. As soon as jars are filled, place immediately in the canner.
3. Cold draught on hot jars.
4. Wire spring or bail too tight.
5. In the steam-canner, having water come above the tray.

*Cornell University Reading Course.

LOSS OF LIQUID FROM JARS

1. Water in boiler not covering jars.
2. False bottom not allowing for free circulation of water underneath the jars.
3. Cover of jar not tight enough.

SHRINKAGE

1. Careless packing. Shake down berries, and steam all greens before packing.
2. Too long cooking.

MOULD

1. Leaky rubbers or tops. Good rubber will stand several hours' boiling. If it should slip out, or if you wish to replace it, return food to canner and sterilize 15 minutes longer.

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